

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Union Carbide Corporation
Acrylics 2 Unit Initial Part 70 Permit
Taft/Star Plant
Taft, St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER19960018
Draft Permit 2254-V0**

I. APPLICANT:

Company:

Union Carbide Corporation
P. O. Box 50, Hahnville, LA 70057

Facility:

Taft/Star Manufacturing Complex
Acrylics 2 Unit
355 Highway 3142, Gate 28, Taft, St. Charles Parish, Louisiana
Approximate UTM coordinates are 746.544 kilometers East and 3319.036
kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Union Carbide Corporation (UCC), a wholly owned subsidiary of Dow Chemical Company, owns and operates a chemical manufacturing complex located in Taft, Louisiana. The chemical manufacturing complex is identified as the Taft/Star Complex. The facility produces a variety of chemical compounds.

UCC has many units at the Taft/Star Complex. Therefore, Title V permit applications have been submitted on a unit (or other appropriate operational division) basis to promote simplicity and efficiency. The Acrylics 2 Unit currently operates under State Permit 2254 (M1) issued January 12, 1995.

The Acrylics 2 Unit consists of a heavy esters and ethyl acrylate processes. The primary products generated in the Acrylics 2 Unit are butyl acrylate and ethyl acrylate. Both butyl acrylate and ethyl acrylate are further processed by customers to make latex paints, other coatings and finishes, adhesives, and elastomeric products.

Many sources at the facility had "grandfathered" status until the promulgation of the "Part 70" program within Louisiana. The facility submitted timely applications for initial Part 70.

Permits and continues to operate pursuant to the "application shield" provided in the program.

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In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit #	Units or Sources	Date Issued
477 (M-1)	Unit 5 (Amines I)	4/25/1990
2446	Unit 8	12/5/1996
2214	LP-6	5/2/2000
476C (M-3)	Oxide II	1/8/2001
2656 (M-2)	Olefins Distribution Unit	3/25/2003

Several Part 70 permits addressing portions of the facility have already been issued. These include:

Permit #	Units or Sources	Date Issued
2257-V2	TB 1 & 2	11/14/1997 *
1909-V0	Polyglycols	10/21/1998 *
2520-00012-V0	Polypropylene Cypress Plant	8/10/1999
2689-V0	General Permit (Tank, TB1 & 2)	8/9/2000
2719-V0	Site Logistics	5/22/2001 *
2751-V0	General Permit (Tank, Site Logistics)	10/13/2001
513-V1	Acrylics I	1/15/2002 *
2799-V0	General Permit (Flare, Unit8)	3/28/2002
2814-V0	Methyl Glycol Ethers (MGE)	10/31/2002
1912-V0	Specialty Products Unit	3/12/2003
2841-V0	General Permit, (Tank, Unit 5 (Amines I))	4/17/2003
898-V0	Unit 6 (Ethylene Amines II)	7/3/03
2864-V0	General Permit, (Tank, Unit 5 (Amines I))	9/4/2003
2847-V0	ASU	9/18/2003
2350-V3	LP-3 Unit	12/30/2003
2876-V0	Unit 9	6/7/2004
2858-V0	PXC Unit	7/8/2004
2104-V0	Environmental Protection Dep. (EPD)	8/11/04
2422-V1	Olefins I & II	9/30/2004
476-V0	Oxide I	3/7/05
2343-V0	Energy Systems	6/27/05
1082-V0	Maintenance and General Facilities	9/10/05
2421-V0	Amines Plants	11/10/05

*Renewal application submitted

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Finally, several applications for initial Part 70 permits addressing the remaining portions of the facility are still under review by the department. These include:

Permit #	Units or Sources
Grandfathered	Acrylics 2
Grandfathered	AP-2
Grandfathered	DAP

Both ethyl acrylate and butyl acrylate are the final products produced from separate esterification reactions. Raw materials are combined in reactors to produce several crude products. Ethyl acrylate is generated from the combination of acrylic acid and ethanol. Butyl acrylate results from a reaction between acrylic acid and butanol. Crude products from the reactors are then refined through a series of distillation steps. The principle products recovered are ethyl acrylate, butyl acrylate, and ethylhexyl acrylate. Processing equipment consists of reactors, distillation columns, and both intermediate and final product tanks.

Vents from the distillation columns and tanks are collected in a closed vent system and routed to the thermal oxidizer, located in the Acrylics 1 Unit (EIQ 253). This vent collection and destruction system has resulted in a large reduction in VOC emissions. However, oxidizer down time, reliability of the vent collection system auxiliaries, and process safety considerations will infrequently result in emissions being routed to the atmosphere for certain periods of time. Uncontrolled emission sources in the Acrylics 2 Unit include a sulfuric acid tank, two knockout pots (during incinerator downtime), and fugitive emissions. The emissions of the remaining tanks, reactors, column vents, and hotwells are routed to the Thermal Oxidizer in the Acrylics 1 Unit.

III. PROPOSED PERMIT/PROJECT INFORMATION:

Proposed Permit

The original Title V Air Permit application was submitted on October 12, 1996. Updates and revisions to the original application were received on December 31, 2002, February 9, 2005, and March 28, 2005.

Project Description

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No physical modifications are being proposed in this permit. In addition there are no planned changes in the method of operation that would result in an increase of emissions. Information from the previous application documents has been updated to include the most current operating information. The only change to be incorporated in the Title V document is that the two processes in the Acrylics 2 Unit (ethyl acrylate production and butyl acrylate production) will be combined into one permitting document.

Permitted Air Emissions

Estimated changes in the permitted emissions from the Acrylics 2 Unit in tons per year are as follows:

Pollutant	Permitted Before	Permitted After	Permitted Change
PM10	3.90	0.00	-3.90
NOx	0.30	0.00	-0.30
SO2	138.00	0.00	-138.00
CO	63.60	0.00	-63.60
VOC*	135.00	34.66	-100.34
Sulfuric Acid	0.002	0.02	+0.018

*VOC emissions Permitted After include a total of 8.36 tons per year Air Toxic compounds. Totals include toxic compounds whose potential to emit is above the Minimum Emission Rate (MER) listed in LAC 33:III. Table 51.1: Acrylic Acid and Ethyl Acrylate.

MACT Requirements

Requirements associated with 40 CFR 63 Subparts F and G apply to several emission points. Compliance with the MACT requirements associated LAC 33:III. Chapter 51 is met by compliance with 40 CFR 63 Subparts F and G.

Air Modeling Analysis

Impact on air quality due to emissions from this unit is below the National Ambient Air Quality Standards (NAAQS). Ambient Air Standards (AAS) dispersion modeling was required for Ethylene Oxide, n-Hexane, Vinyl Chloride and Acrylic Acid. The Dispersion Model used was ISCST3 (Version 02035).

Union Carbide's dispersion modeling results predict the ambient concentration of the pollutants Ethylene Oxide, n-Hexane and Vinyl Chloride

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to be below the corresponding requirements for the Ambient Air Standard (AAS) provided in LAC 33:III.Chapter 51 Table 51.2.

To determine compliance with the Louisiana Ambient Air Standards (AAS) for acrylic acid, permittee shall establish ambient monitoring for this pollutant in accordance with a monitoring plan and operating procedures to be approved by the Office of Environmental Assessment. The monitoring plan and operating procedures shall be submitted within 45 days of the permit issuance, and the monitoring should commence as soon as practical but no later than 90 days from the date of permit issuance. Monitoring sites should be based upon consideration of the maximum off site concentrations as predicted by dispersion modeling of Union Carbide's permitted emissions alone and of permitted emissions from all sources in the Union Carbide Area of Inclusion (AOI). If monitoring indicates off-site levels of acrylic acid above the AAS, further remedial action will be required to achieve compliance with the ambient air standards; permittee shall submit an application for permit modification within 60 days after completion of monitoring.

Regulatory Analysis

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, Louisiana Comprehensive TAP Emission Control Program, NSPS, and NESHAP regulations.

Louisiana Air Quality Regulations and NSPS

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, in Tables 1 and 2 of the draft permit. Similarly, the Monitoring, Reporting, and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions, and standards are provided in the Facility Specific Requirements Section of the draft permit.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General condition XVII Activities are not subject to testing, monitoring, reporting, or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

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Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. PERMIT SHIELDS

A permit shield was not requested.

V. PERIODIC MONITORING

No facility specific periodic monitoring requirements were included in the draft permit.

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Glossary

Carbon Monoxide (CO) – A colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consist of nitrogen and oxygen.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated

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pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Sulfur Dioxide (SO₂) – An oxide of sulphur.

TAP - Toxic Air Pollutant - LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.